

Amendments to the Claims

1. (Currently Amended) A high frequency semiconductor device having a shifted doping profile, comprising:

a buried oxide layer formed over a semiconductor substrate; and
a silicon layer formed over the buried oxide layer, wherein the silicon layer comprises a body region, a source region formed on the body region, a drain region, and a drift region extending between the body region and the drain region, wherein an origin of a doping profile of the silicon layer is within a the body region of the device and has a dopant level of approximately zero.

2. (Cancelled).

3. (Original) The device of claim 1, further comprising a top oxide layer, wherein the origin of the doping profile is offset approximately 2 to 4 μ m from an edge of the top oxide layer.

4. (Original) The device of claim 1, further comprising a field plate formed over the top oxide layer and a plate oxide layer formed over the field plate.

5. (Original) The device of claim 4, further comprising a source metal, a gate metal, and a drain metal formed over the silicon layer.

6. (Original) The device of claim 1, wherein the doping profile is linear.

7. (Original) The device of claim 1, wherein the doping profile is non-linear.

8. (Currently Amended) A high frequency semiconductor device having a shifted doping profile, comprising:

- a buried oxide layer formed over a semiconductor substrate;
- a silicon layer formed over the buried oxide layer, wherein the silicon layer comprises a source region, a body region, a drift region, and a drain region body region, a source region formed on the body region, a drain region, and a drift region extending between the body region and the drain region; and

a top oxide layer formed over the silicon layer, wherein a doping profile of the silicon layer has an origin that has a dopant level of approximately zero, and wherein the origin is within the body region, approximately 2 to 4 μ m from an edge of the top oxide layer.

9. (Original) The device of claim 8, wherein the doping profile is linear.

10. (Original) The device of claim 8, wherein the doping profile is non-linear.

11. (Original) The device of claim 8, further comprising a field plate formed over the top oxide layer and a plate oxide layer formed over the field plate.

12. (Original) The device of claim 11, further comprising a source metal, a gate metal, a drain metal formed over the silicon layer.

13. (Original) The device of claim 8, wherein the device has a transconductance approximately 15% higher and a maximum current approximately 45% higher than a device having a doping profile origin approximately aligned with the edge of the top oxide layer.